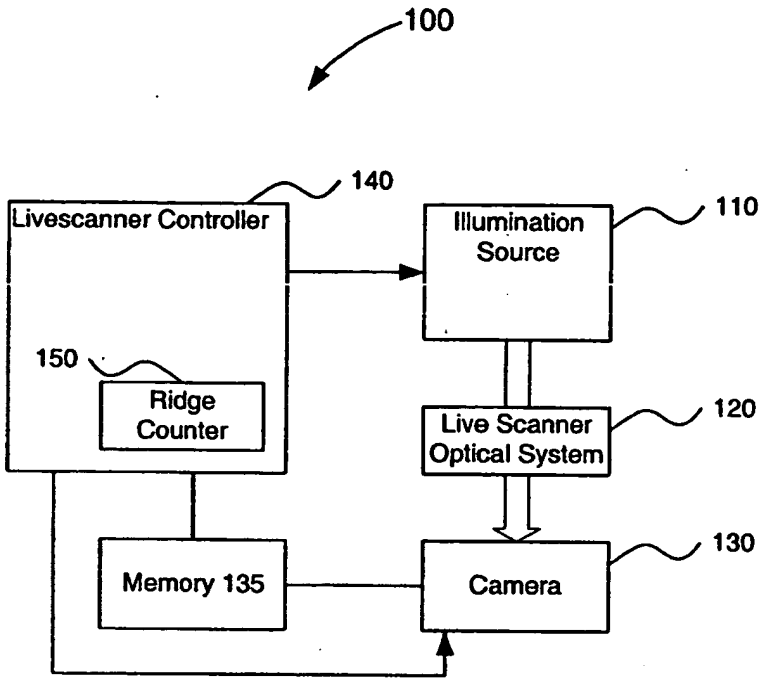

FIG. 1

0203-25.vsd/1

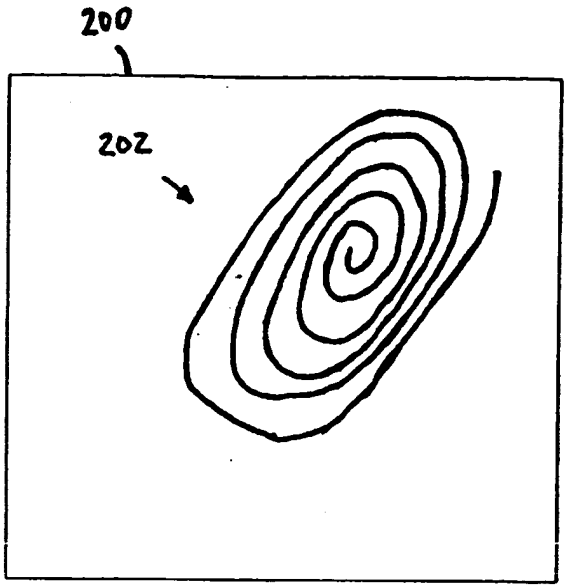

FIG. 2A

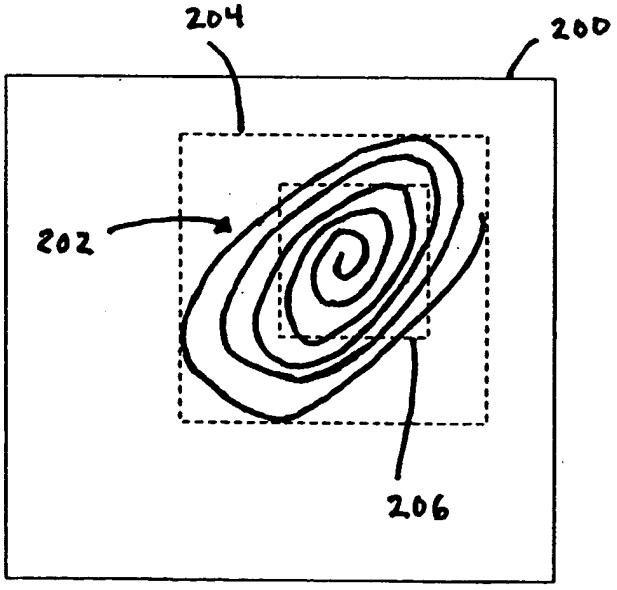

FIG. 2B

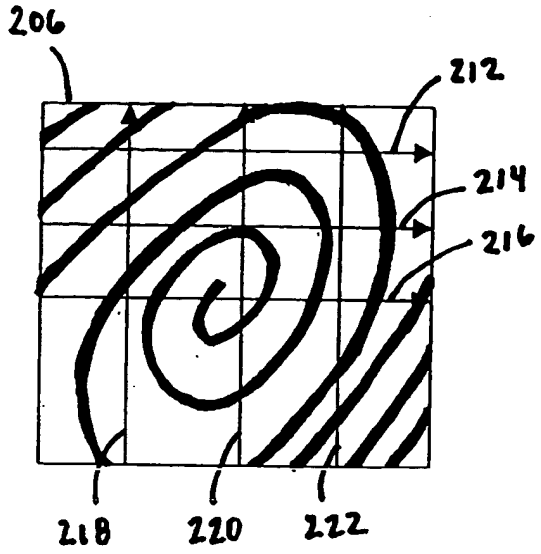
206
212
214
216
218
220
222

FIG. 2C

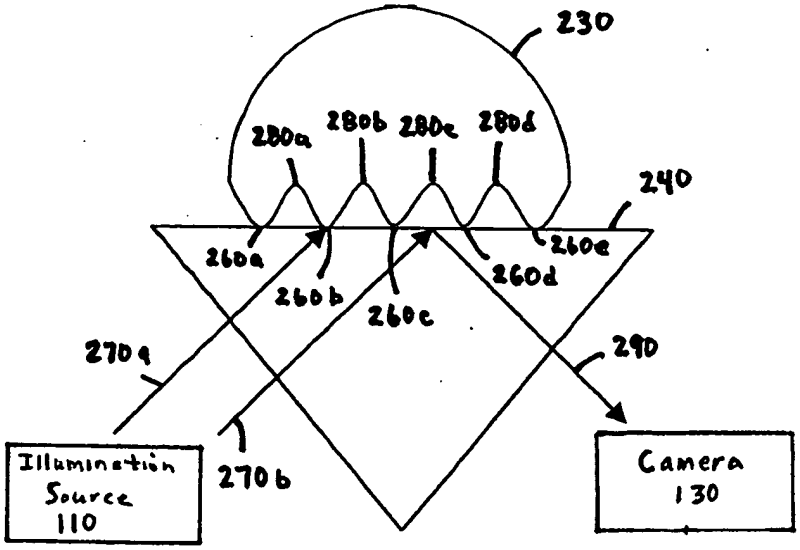
230
280a
280b
280c
280d
240
260a
260b
260c
260d
260e
270a
270b
290
Illumination Source 110
Camera 130

FIG. 2D

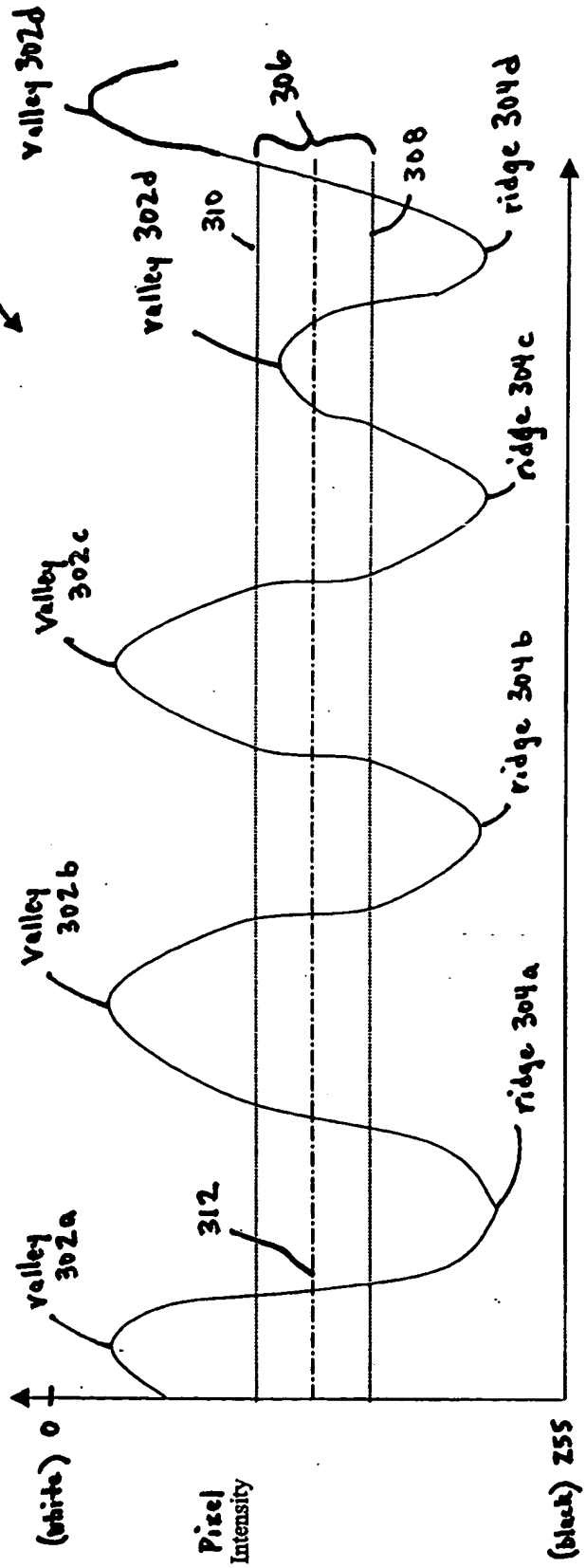
300
Valley 302d
306
308
ridge 304d
Valley 302d
310
ridge 304c
Valley 302c
ridge 304b
Valley 302b
ridge 304a
Valley 302a
312
(white) 0
Pixel Intensity
(black) 255
Pixel path

FIG. 3

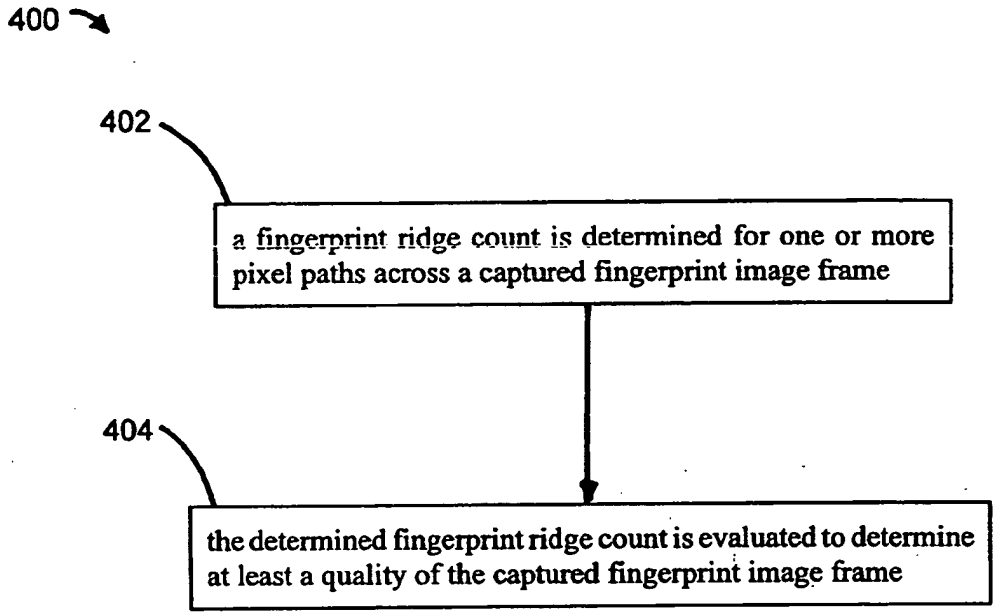
400
402
a fingerprint ridge count is determined for one or more pixel paths across a captured fingerprint image frame
404
the determined fingerprint ridge count is evaluated to determine at least a quality of the captured fingerprint image frame

FIG. 4

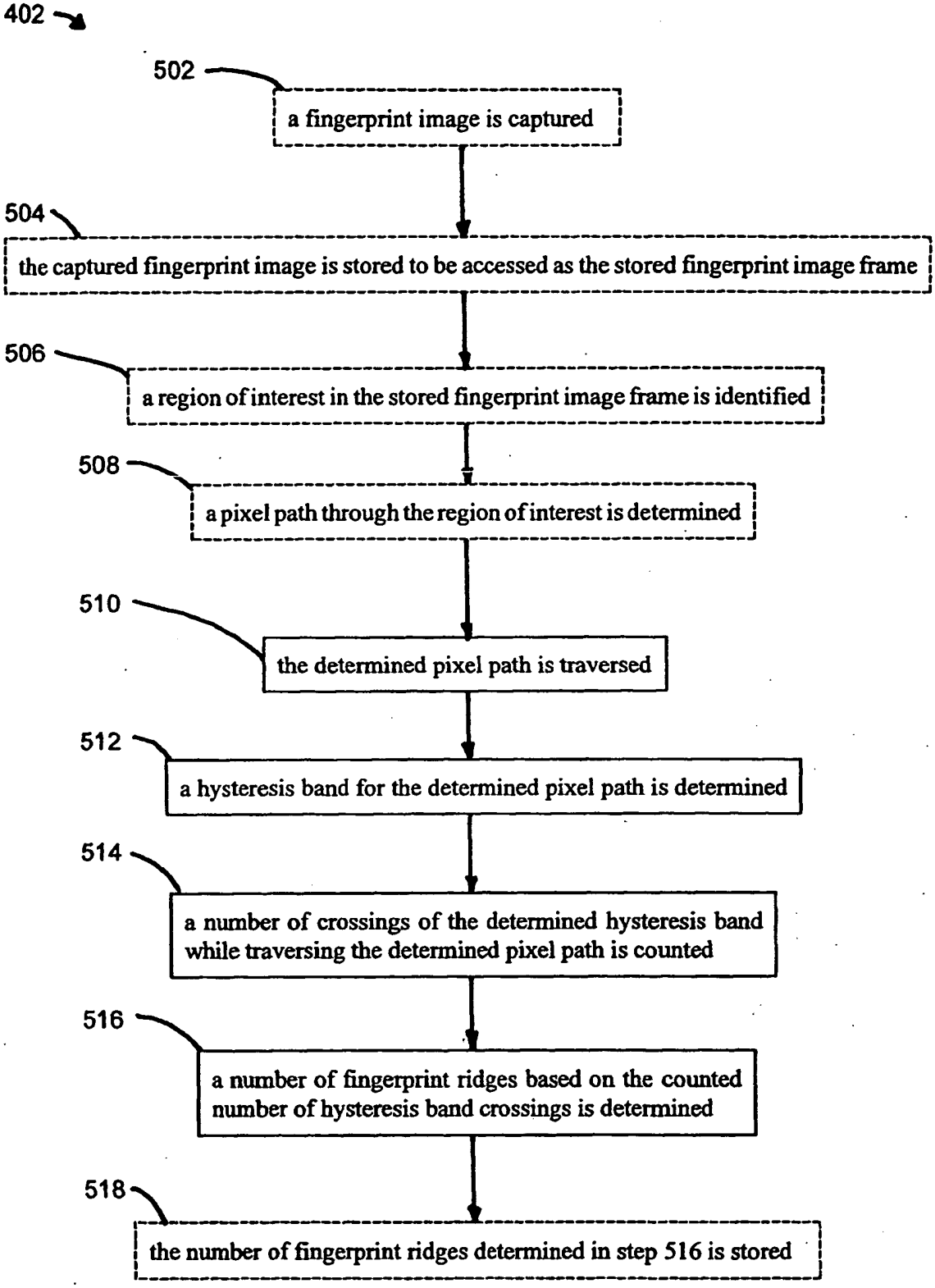
402
502
a fingerprint image is captured
504
the captured fingerprint image is stored to be accessed as the stored fingerprint image frame
506
a region of interest in the stored fingerprint image frame is identified
508
a pixel path through the region of interest is determined
510
the determined pixel path is traversed
512
a hysteresis band for the determined pixel path is determined
514
a number of crossings of the determined hysteresis band while traversing the determined pixel path is counted
516
a number of fingerprint ridges based on the counted number of hysteresis band crossings is determined
518
the number of fingerprint ridges determined in step 516 is stored

FIG. 5

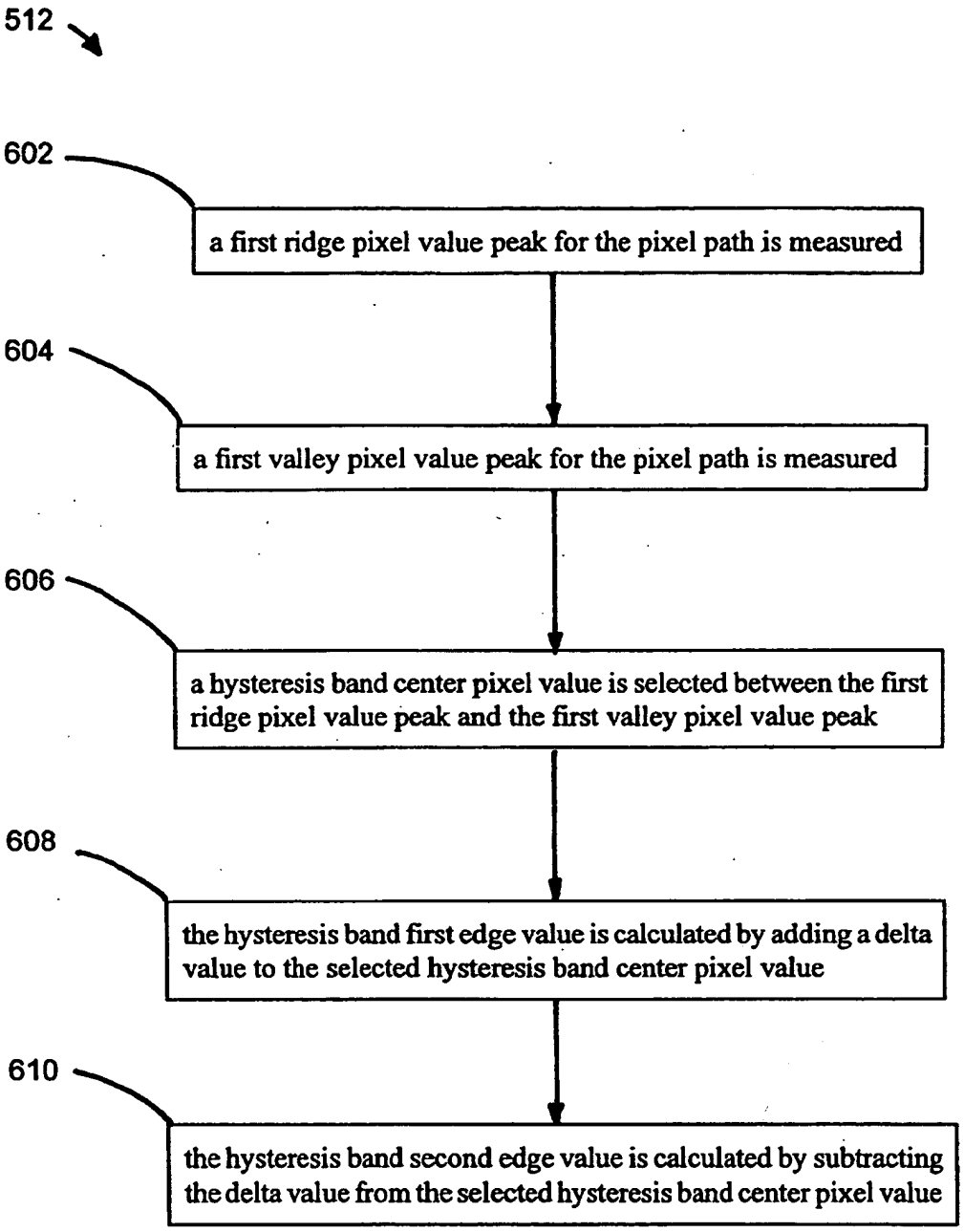
512
602
a first ridge pixel value peak for the pixel path is measured
604
a first valley pixel value peak for the pixel path is measured
606
a hysteresis band center pixel value is selected between the first ridge pixel value peak and the first valley pixel value peak
608
the hysteresis band first edge value is calculated by adding a delta value to the selected hysteresis band center pixel value
610
the hysteresis band second edge value is calculated by subtracting the delta value from the selected hysteresis band center pixel value

FIG. 6

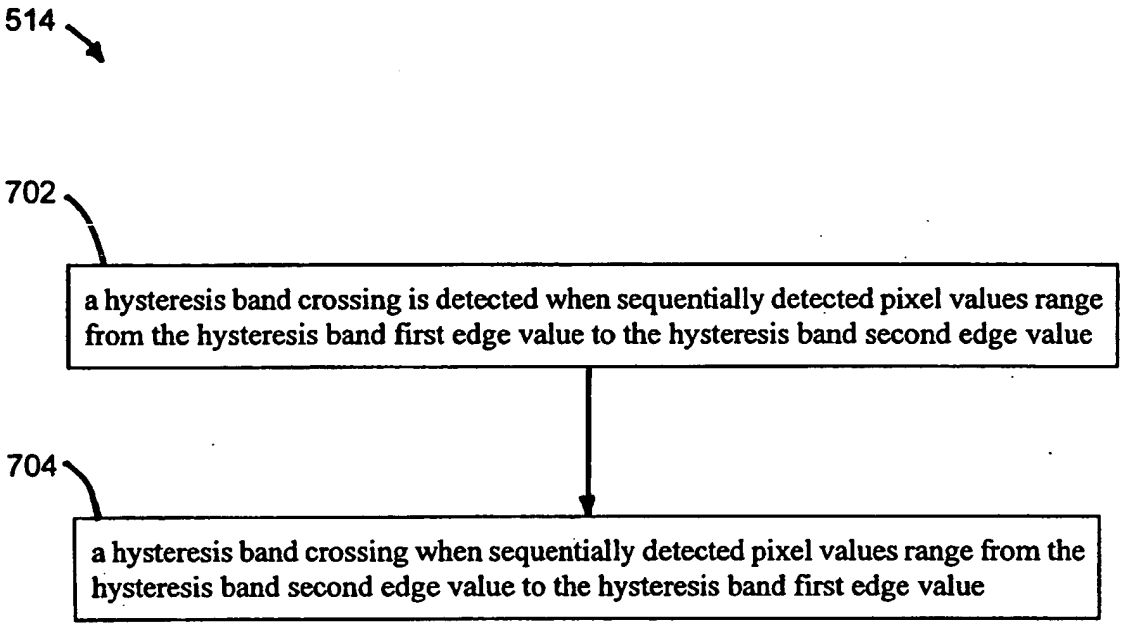
514
702
a hysteresis band crossing is detected when sequentially detected pixel values range from the hysteresis band first edge value to the hysteresis band second edge value
704
a hysteresis band crossing when sequentially detected pixel values range from the hysteresis band second edge value to the hysteresis band first edge value

FIG. 7

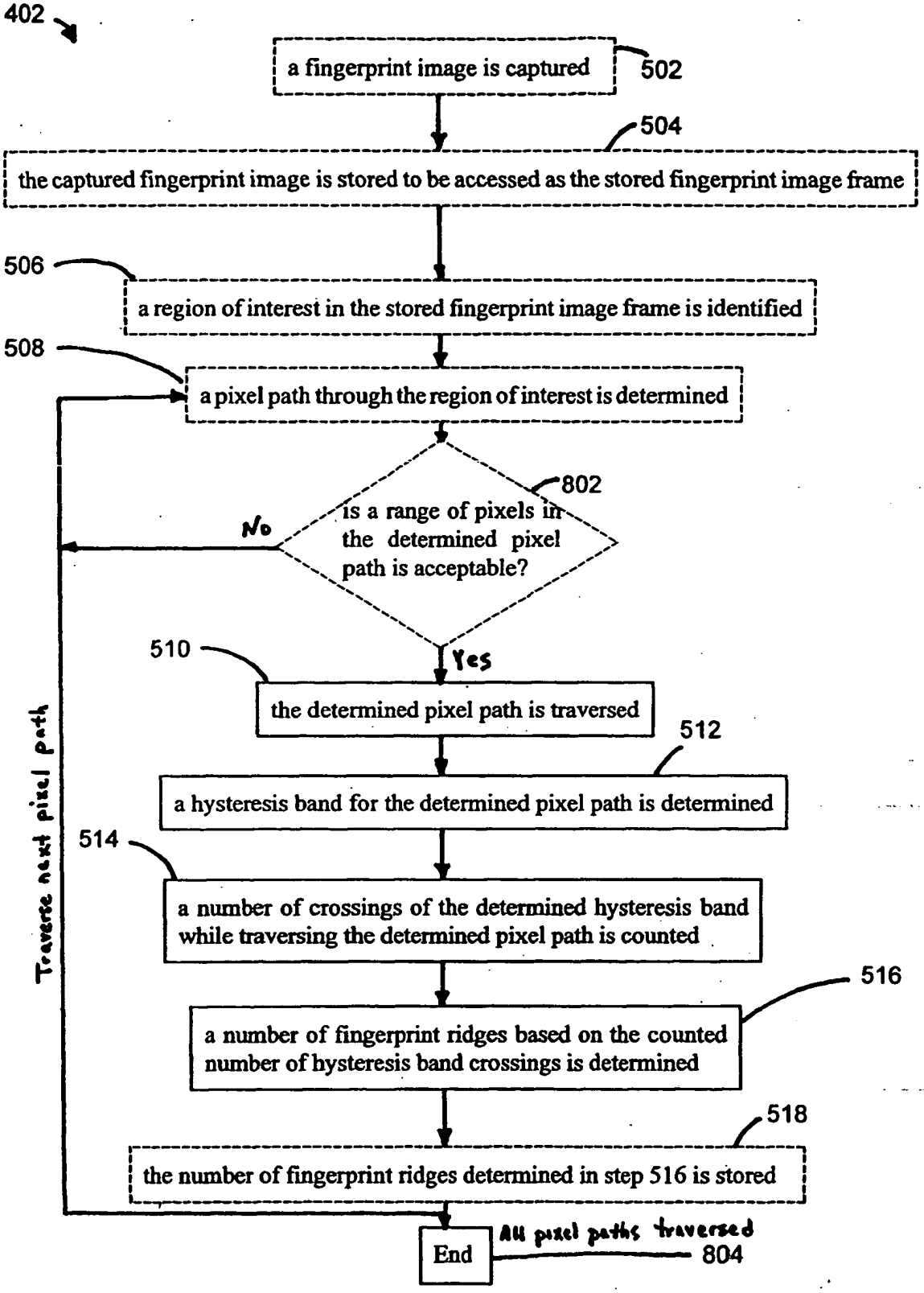
402
a fingerprint image is captured
502
504
the captured fingerprint image is stored to be accessed as the stored fingerprint image frame
506
a region of interest in the stored fingerprint image frame is identified
508
a pixel path through the region of interest is determined
802
is a range of pixels in the determined pixel path is acceptable?
No
Yes
510
the determined pixel path is traversed
512
a hysteresis band for the determined pixel path is determined
514
a number of crossings of the determined hysteresis band while traversing the determined pixel path is counted
516
a number of fingerprint ridges based on the counted number of hysteresis band crossings is determined
518
the number of fingerprint ridges determined in step 516 is stored
Traverse next pixel path
End
All pixel paths traversed
804

FIG. 8